REMARKS/ARGUMENTS

Reconsideration is respectfully requested of the objection to the claims in view of the Whitehouse et al. reference. In particular, the claims were rejected as being anticipated by Whitehouse et al. Applicant respectfully traverses this rejection.

Claims 1 and 14 have been amended to clearly set forth that the method and apparatus of this invention have a mass selection device before the collision cell. Therefore the mass-selective specificity of the first fragmentation step is more mass selective since only ions of one m/z value are injected in the collision cell, and are subsequently fragmented by collision with the gas molecules in the cell.

Whitehouse et al., does not teach nor suggest such a mass selection device before the collision cell. This is because, Whitehouse et al. provides for mass selection within the collision cell. Therefore ions other than the parent or precursor ions may contribute to the fragmentation products and appear in the background spectra.

In particular, in Whitehouse et al., the first fragmentation step is undertaken by admitting all ions into the collision cell without any mass selection. The collision-induced fragmentation that follows in Whitehouse et al. is then done for a specific m/z value. This is described by choosing the resonance frequency (RF and AC field) associated with those ions, for resonance excitation CID fragmentation, while all other ions within the collision cell are—ideally—unaffected, i.e., they do not resonant excite. Therefore, the mass spectrum will contain all ions in addition to the fragment ions (see column 14, lines 50–54 of Whitehouse et al.).

Accordingly, Whitehouse et al. does not teach nor suggest the claimed method and apparatus of the present invention, in as much as Whitehouse et al. does not teach a method and apparatus that provides a mass selection device that transmits a stream

of precursor ions therefrom; supplies the stream of precursor ions and a collision gas to a multipole and providing an RF signal to the multipole, whereby the multipole functions as a collision cell; fragments said precursor ions in the RF multipole by collisions with the gas molecules, in order to form primary fragment ions; supplies additional alternating current to the multipole at a frequency selected to cause resonance excitation of a desired primary fragment ion mass-to-charge ratio, whereby ions with said desired primary fragment ion mass-to-charge ratio are excited and undergo collisions with the gas molecules causing production of secondary fragment ions; modulates the alternating current signal applied whereby periods in which said alternating current signal is applied alternate with periods in which the alternating signal is not applied; detects the ion signal after fragmentation with a mass spectrometer and collecting one set of data for one spectrum, representative of the ion spectrum when the alternating current signal is applied and another set of data for another spectrum, representative of the ion spectrum when the alternating current signal is not applied; whereby said other spectrum can be subtracted from said one spectrum, to generate a subtracted spectrum showing the secondary fragment ions without the presence of the primary fragment ions except for any said primary fragment ions which are generated.

Moreover, applicant notes that the ion guide as described in Whitehouse et al. is an ion storage device (see, for example, column 8, lines 31–32), and not specifically a flow-through mass analyzer for selecting parent ions as in the current invention. In particular, the mass selection and fragmentation steps are performed in the same multipole ion guide in Whitehouse (see, for example, column 8, line 36, to column 9, line 18). As previously mentioned, this can be contrasted to the present invention where a mass selection device is separate from the fragmentation multipole ion guide.

In applicants submission there is not even the most remote suggestion in any way, shape or form of modifying the Whitehouse et al. method or apparatus for the purposes of the present invention as described and now claimed.

Accordingly, it is respectfully submitted that all of the rejections have been addressed, and that the present application is in condition for allowance and an early notice to that effect is earnestly solicited.

Should the Examiner have any further issues outstanding, applicant invites the Examiner to call the undersigned at (416) 957-1697.

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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By _____

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